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Abstract It is typically assumed that people engage in entrepreneurship because there are profits to be made. In contrast to this view, this paper argues that entrepreneurship is more adequately characterized as a non-profit-seeking activity. Evidence from a broad range of authors and academic fields is discussed showing that entrepreneurship does quite generally not pay in monetary terms. Being an entrepreneur seems to be rather rewarding because it entails substantial non-monetary benefits, like greater autonomy, broader skill utilization, and the possibility to pursue one's own ideas. It is shown how incorporating these non-monetary benefits into economic models of entrepreneurship can lead to a better understanding of the phenomenon.

Keywords Entrepreneurship · Self-employment · Wage and return differentials · Non-monetary work benefits · Job satisfaction

JEL Classification M13 · J23 · J31 · J32 · M54

[The entrepreneur] often holds his own with great tenacity even under considerable disadvantages; for the freedom and dignity of his position are very attractive to him.

Alfred Marshall, "Principles of Economics," VI.VII.20

...but more, much more than this, I did it my way.

Frank Sinatra, "My Way"

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Entrepreneurship has received a renewed interest in economics over the last few years. It is acknowledged that entrepreneurs have played a crucial role for the successful transition of former socialist to market economies in the 1990s (McMillan & Woodruff, 2002); their essential function as agents of economic change, already described by Schumpeter (1934), is reappraised in the context of growth theory (Aghion & Howitt, 1997); and the important role of entrepreneurs for innovation is stressed (Baumol, 2004). Following this increased interest, economists have also begun to propose new theoretical accounts of entrepreneurship (e.g., Lazear, 2005; Murphy, Shleifer, & Vishny, 1991). Typically, economic models of entrepreneurship start from the assumption that entrepreneurial activities are undertaken when it pays to do so. People become entrepreneurs because there are profits to be made, and they are rewarded for their entrepreneurial undertakings in terms of income and wealth.

In this paper, it is argued that entrepreneurship cannot possibly be understood as a quest for profit alone. Rather, a more accurate description of entrepreneurship is that of a non-profit-seeking activity. A considerable body of empirical evidence has been brought about in recent years showing that entrepreneurship does quite generally not pay in a monetary sense. People engage in entrepreneurship, for example, although they could earn more money in alternative work settings, like being a regular employee, and they keep investing their wealth in their own firms although risk-adjusted returns on the public stock market are higher. I discuss a broad range of empirical evidence indicating that entrepreneurship is not particularly attractive in material terms. The empirical evidence in fact suggests that being an entrepreneur is rewarding in a different way, namely by providing individuals with non-pecuniary satisfaction from aspects like being their own bosses, having the possibility to use their skills and abilities, and pursuing their own creative ideas.

Many of the issues raised in this paper are aptly summarized in the two citations given at the outset. Unlike current economic theorizing, classical economists like Marshall have been careful in depicting the entrepreneur not as a purely profit-driven person, but as an actor importantly motivated by non-economic concerns, like the "freedom and dignity of his position." Similar notions are reminiscent in Frank Sinatra's signature song "My Way," which is often considered as an embodiment of the American dream (Sinatra used to announce this song in his concerts with the words "We're about to sing the national anthem, but you needn't rise"; Friedwald, 1995: 445). Interestingly, the song does not praise success in terms of wealth or income, but sees the way by which things are done as important. This theme very much resounds in the present study of entrepreneurship: this essential function in market economies is not undertaken so much in pursuit of better material outcomes, but because it is a satisfying way to do things in itself.[1]

The aim of this paper is not to give a comprehensive survey of the literature on entrepreneurship; an excellent account of the existing research can be found e.g., in Parker (2004). Rather, the purpose is to offer a re-conceptualization of the economic view on entrepreneurship. The article begins by shortly discussing definitions of entrepreneurship, and then presents empirical evidence from a broad range of

[1] Entrepreneurship can therefore be seen as a source of "procedural utility" (Frey, Benz, & Stutzer, 2004), meaning that people do not only value material outcomes, but also the processes and conditions leading to outcomes.

authors and academic fields showing that entrepreneurship is essentially a non-profit-seeking activity. Further, implications of this novel view for economic theory are explored. Using recent theoretical models of entrepreneurship (Lazear, 2005; Murphy et al., 1991), it is illustrated how the understanding of entrepreneurial behavior is changed once non-economic considerations are taken into account. Subsequently, some extensions of the arguments are discussed, and important counterarguments against the re-conceptualization addressed. In particular, it is discussed to what extent entrepreneurial over-optimism and risk-seeking can also explain the empirical regularities. After presenting consequences for economic policy, the paper is concluded by offering some short closing remarks.

Empirical evidence on the non-profit-seeking nature of entrepreneurship

Who is an entrepreneur?

Entrepreneurship is a concept notoriously difficult to define. While some observers have equated it with business ownership, others have stressed the innovative character of the activity, arguing, for example, that managers introducing new products, business processes or organizational structures should also be seen as entrepreneurs, whereas business owners not engaging in innovative activities should not be counted as such (for a discussion of different views on entrepreneurship, see e.g., van Praag, 1999; Parker, 2004). For the purposes of this paper, it seems appropriate to assume a pragmatic definition of entrepreneurship. Being an entrepreneur is defined here to mean that someone is a self-employed business owner. While this definition puts strong emphasis on the ownership aspect of entrepreneurship, it will be relaxed later in the paper, in order to show that the arguments can be extended also to areas outside the narrow scope of business ownership.

Does entrepreneurship pay?—evidence from compensating differentials on labor and capital markets

An important question in entrepreneurship research is whether it pays to be an entrepreneur. Information on the monetary returns to entrepreneurship is crucial, because it allows to assess the economic incentives that people face to engage in entrepreneurial undertakings. Over the recent years, there has been a rise in rigorous empirical work on the monetary rewards associated with entrepreneurship. This considerable body of evidence shows a remarkably clear picture: entrepreneurship is not particularly attractive in material terms.

A first influential study on the monetary returns to entrepreneurship is provided by Hamilton (2000). The author compares the relative earnings of employed and self-employed persons in the United States using a particularly detailed dataset. The empirical results document an inferior earnings situation for most entrepreneurs. Self-employed business owners are found to start out with lower initial earnings than persons in paid employment, and they subsequently also experience lower earnings

growth. This leads to substantial income differences over time. After 10 years in business, the median entrepreneur earns 35% less than what he or she could have obtained in a paid job of the same duration. It is noteworthy that this finding of substantial earnings differences does not depend on the measure of self-employment earnings used, and it cannot be explained by a generally lower ability of persons entering self-employment, as the author shows in a self-selection model. The study, however, may not adequately account for the possibility of the self-employed to "consume on the job" (e.g., by calculating the use of a private car as a business expense). On the other hand, important fringe benefits, like employer-provided health insurance, are not accounted for in the calculation of employees' earnings.

The results by Hamilton (2000) suggest that entrepreneurship in the United States does quite generally not pay in monetary terms. The largest part of entrepreneurs seems to get less out of their businesses than what they could earn as regular employees. Only the most successful entrepreneurs, namely those in the top quartile of the income distribution, are found to have similar or higher earnings than comparable employees. This reflects a stylized fact about entrepreneurial incomes that has also been documented for other countries: the returns to entrepreneurship are characterized by a "superstar-distribution" (for West Germany, see Merz, 2004; for Finland, Poutvaara & Tuomala, 2004; and for older evidence on a broader set of OECD countries, OECD, 1992).[2] According to Rosen (1981), a superstar-distribution exists when a small number of individuals earns very high incomes, but most individuals' incomes are below average. Entrepreneurial earnings correspond to such a very skewed distribution. Hamilton (2000) shows that, as a consequence, the average earnings of the self-employed in the United States are considerably higher than their median earnings; in fact, they are quite comparable to the average earnings of employees. In expected terms, thus, the monetary returns to entrepreneurship are not different from those in dependent employment. However, because entrepreneurship is associated with a considerably higher income variance and income risk, one would expect average self-employed earnings to be higher than average employee earnings, as the increased income risk should be compensated by a risk premium.

The material situation of entrepreneurs is highlighted from a different angle in a second influential study by Moskowitz and Vissing-Jorgensen (2002). The authors do not look at self-employment earnings, but study the returns to private equity, i.e., equity that is not publicly traded on stockmarkets. Private equity is largely equivalent with the investments that entrepreneurs make in their own firms; in the United States, for example, only about 1% of all private equity is held by venture capital funds, while the rest is owned by private households. The study by Moskowitz and Vissing-Jorgensen (2002) establishes several interesting facts about these entrepreneurial investments. First, they show that entrepreneurs invest a large part of their total wealth in the firms that they run, on average 70%. Second, despite this dramatic lack of diversification, the financial returns on private equity are on average not higher than that of public equity traded on stockmarkets. Entrepreneurs

[2] It is an interesting question why there is a superstar-distribution of entrepreneurial incomes. This is further explored in "Why is there a superstar-distribution of entrepreneurial incomes?" and "Counter-arguments and alternative explanations."

seem to invest large amounts of their wealth in their own firms, although they could obtain higher risk-adjusted returns on the public equity market. Entrepreneurship, again, is found not to pay in a monetary sense, in comparison to the relevant alternatives. Further evidence from capital markets corroborates this observation. Kerins, Smith, and Smith (2004), for example, show that entrepreneurs are willing to bear a much higher cost of capital for their ventures than diversified investors. In the same vein, Gimeno, Folta, Cooper, and Woo (1997) document that many entrepreneurial firms survive and continue in business despite comparatively low financial performance.

A third way to assess the monetary success of entrepreneurs is to look at inventions made by small-business owners. Entrepreneurial innovations play an important role for the total innovative activity in market economies; it has been shown, for example, that the majority of "break-through" innovations is made by entrepreneurs, while large firms investing in R&D rather concentrate on "incremental" innovations (Baumol, 2004). A study by Åstebro (2003) investigates the financial returns that entrepreneurs make on their innovative activities using a large dataset of inventions. The results show that the average return on entrepreneurial innovations is rather unimpressive; it is lower than the return to high-risk securities or early-stage venture capital funds. More importantly, the financial success of entrepreneurial innovations is very unequally distributed. Only between 7 and 9% of all inventions reach the market, and while a handful of those realize very high returns (above 1,400%), the majority fails to obtain positive returns, leading to a negative return for the median invention. Entrepreneurs seem to engage in innovative activities although in most cases, they do not gain, but lose money from doing it. Again, the empirical evidence shows that entrepreneurship is not particularly attractive in material terms.

The evidence discussed from the labor and capital markets documents a quite surprising finding about entrepreneurship. Being an entrepreneur emerges as an activity that does quite generally not pay in monetary terms. Rather, comparatively speaking, entrepreneurship seems to be better characterized as a non-profit-seeking activity. But if entrepreneurship doesn't pay, why do people engage in it?

What makes entrepreneurship attractive?—evidence on non-pecuniary benefits of being an entrepreneur

The existence of compensating wage and return differentials for entrepreneurship has led many observers to speculate why people undertake entrepreneurial activities. Hamilton (2000: 628), for example, sees as a plausible explanation for his results presented above that "self-employment offers significant nonpecuniary benefits, such as 'being your own boss'." Moskovitz and Vissing-Jorgensen (2002: 772f.) also regard the high independence and autonomy of business owners as a potential explanation of their findings, but they discuss also alternative interpretations, such as a lower risk aversion of entrepreneurs, over-optimism, and a preference for skewed outcome distributions (similar to lotteries). Similar arguments are brought forward by Åstebro (2003). None of these studies, however, directly investigates the question why people engage in entrepreneurship despite the adverse monetary consequences.

The potential non-material benefits of being an entrepreneur have been researched in recent studies by Benz and Frey (2007), Frey and Benz (2003) and Hundley (2001). The authors employ an empirical approach that aims at evaluating entrepreneurs' utility at their jobs directly, by using measures of job satisfaction as proxies for the utility gained from work. The studies show, first, that self-employed people are considerably more satisfied with their jobs than employed persons, corroborating a result that is by now well established in the labor economics literature (e.g., Blanchflower & Oswald, 1998; Blanchflower, 2000; Kawaguchi, 2002).[3] The authors then investigate why self-employed business owners are happier with their jobs. Benz and Frey (2007), using a sample of 23 countries from different geographical and cultural world regions, show that the higher job satisfaction of the self-employed can largely be attributed to two factors: higher autonomy and a more interesting work content. They find that in Western European, North American and Eastern European countries, the higher autonomy and the more interesting jobs of the self-employed explain a large part of the job satisfaction differential between self-employed and employed persons, while other work aspects like pay, job security or opportunities for advancement cannot account for the observed differences (see also Frey & Benz, 2003). Very similar results are presented for the United States by Hundley (2001). The author shows that self-employed persons in the U.S. are mainly more satisfied in their jobs because they have more autonomy, greater possibilities to use their skills and abilities, as well as a higher work flexibility.

The studies discussed give a direct indication of the non-monetary benefits associated with entrepreneurship. Being an entrepreneur seems to be attractive, not because it leads to a high income or wealth, but rather because it provides non-pecuniary satisfaction from being one's own boss, from broad possibilities to use one's skills and abilities, and from a resulting richer work content. Although no direct evidence has been presented, it can be hypothesized that similar aspects are responsible for Åstebro's (2003) finding that entrepreneurs are willing to engage in innovative activities despite of poor expected financial returns. Amabile (1983, 1997), for example, argues that people often undertake creative endeavors simply because they like to engage in interesting, exciting and personally challenging activities. It should be noted, however, that the studies presented cannot completely rule out alternative explanations of the results, like a tendency of entrepreneurs to be less risk-averse or more over-optimistic. These alternative interpretations will be further addressed later in the paper.

[3] Several of these studies also show that the higher job satisfaction of self-employed people is not due to different personality characteristics. If e.g., intrinsically optimistic people are more likely to be self-employed, and at the same time report higher job satisfaction regardless of their employment situation, a positive relationship between self-employment and job satisfaction might merely reflect personality differences. Using an individual-fixed-effects methodology in panel data, Frey and Benz (2003), Kawaguchi (2002) and Hundley (2001) document that this is unlikely to be the case. It is also noteworthy that the self-employment—job satisfaction result does not crucially depend on the definition of self-employment. Blanchflower (2004), for example, shows that self-employed business owners with employees, who can be considered as the most 'entrepreneurial' group within the self-employed, have generally the highest job satisfaction among self-employed people.

Why do people start firms?—subjective assessments of prospective entrepreneurs

The evidence presented so far shall be complemented with findings that do not rely on rigorous empirical methods, but are rather based on entrepreneurs' own assessments of why they started their own firms. Qualitative data can give important additional insights into people's motivations to engage in entrepreneurial activities. The existing studies largely confirm the view that entrepreneurship is essentially a non-profit-seeking activity.

An early qualitative study is provided by Vivarelli (1991), who investigates the reasons for starting a firm in a sample of Italian entrepreneurs. Among multiple reasons that people can choose from, "aspiration to a higher income" is mentioned by less than half of the entrepreneurs as a motivation for engaging in entrepreneurship (47.1%). In contrast, non-pecuniary factors are considered to be much more important. Almost 80% of the entrepreneurs state that the "desire to be independent" was crucial for their choice to start their own firm (78.9%). In a similar vein, the goal to "better exploit one's own technical capabilities" (53.6%) is seen to be relevant, as well as the desire to "better exploit one's own managerial capabilities" (36.6%) and "commercial capabilities" (31.3%). Other potential factors, like "family tradition" (14.1%) and "other factors" (7.9%), are attributed a minor role. Entrepreneurs thus think that they are mainly motivated to start a firm by the non-pecuniary qualities of entrepreneurship, like the possibility to be one's own boss and to put one's skills and abilities to use. Although monetary factors are mentioned as well, they are judged to be of lesser importance. A second study by Vivarelli (2004) reaches very similar findings covering a somewhat broader set of reasons to start a firm. The desire for autonomy and independence again emerges as the main reason to become an entrepreneur, while pecuniary factors such as profit expectations or the intention to exploit a market niche only take an intermediate position. Amit et al. (2000) show for a sample of Canadian high technology entrepreneurs that personal wealth attainment is significantly less important for their decision to found a firm than an aggregate index of ten other work dimensions; moreover, compared to a control group of technology managers that decided not to start a venture, entrepreneurs are found to be significantly less concerned with wealth considerations when thinking about starting a firm.

Evaluation

Empirical research employing a wide range of methodological approaches, covering different countries and data sources, and stemming from a variety of authors and academic fields shows a regularity about entrepreneurship that has rarely been interpreted in a common light. Being an entrepreneur is not particularly attractive in expected monetary terms; rather, comparatively speaking, entrepreneurship seems to be more adequately characterized as a non-profit-seeking activity. People engage in entrepreneurial undertakings despite of poor expected financial returns, but they gain utility from other aspects associated with entrepreneurship, like independence, greater possibilities to use one's abilities, and the chance to be creative in doing one's own

thing. Economic theories of entrepreneurship are likely to gain from taking these factors into account.

The notion that entrepreneurship is a non-profit-seeking activity should not be taken to mean, of course, that entrepreneurs are not interested in money at all. Entrepreneurs are certainly also motivated by financial considerations, especially at the margin. There is ample evidence that entrepreneurs react to changes in financial incentives in predictable economic ways (for taxes, see e.g., Schuetze & Bruce, 2004; for profit making opportunities, e.g., McMillan & Woodruff, 2002; Baumol, 1990, 1993; and for patent protection, e.g., Hvide, 2004). The argument made here, however, is that in comparison to the relevant alternatives, entrepreneurship is not only and not even mainly a quest for profit. Entrepreneurial ventures are to a considerable extent undertaken for reasons other than financial gain.

Implications for economic theories of entrepreneurship

If entrepreneurship is a non-profit-seeking activity, how does this change economic theories of entrepreneurship? In this section, it shall be illustrated using recent models of entrepreneurship (Lazear, 2005; Murphy et al., 1991) how the incorporation of non-monetary concerns alters the understanding of entrepreneurial behavior, and that different predictions result from an enriched model of entrepreneurship. Although the theoretical modelling of entrepreneurship offered here is extremely simple, and the changes introduced may appear minor, a different view on entrepreneurship nevertheless emerges from this theoretical treatment.

Lazear's model of entrepreneurship and balanced skills

In a recent paper, Lazear (2005) proposes a straightforward but powerful model of entrepreneurship. The basic theoretical idea is that entrepreneurs have to be sufficiently good at a variety of skills, while people who work for others can specialize in a single skill. For example, it may be enough to be a talented software programmer to be a good employee, but it is not sufficient to successfully start an internet firm. In addition to being skilled in software development, the founder of a firm must be able to obtain financing, hire motivated employees, find office space at a reasonable cost, keep books, stick to the business plan, and market the firm. The success of the entrepreneurial venture importantly depends on the "weakest link" in this set of tasks the entrepreneur has to perform. Lazear's model expresses this feature of entrepreneurship in the following production functions:

$$\text{specialist income} = \max\left[x_1, x_2\right] \tag{1}$$

$$\text{entrepreneur income} = \lambda \min\left[x_1, x_2\right] \tag{2}$$

where x_1, x_2 are two skills that an individual possesses. Equations 1 and 2 capture the notion that people who are specialists receive an income that is determined by their best skill, while the income of entrepreneurs is limited by their weakest attribute. The parameter λ measures the value of the entrepreneurial function, i.e., it

reflects the market compensation that individuals receive in return for engaging in entrepreneurial activities.

Who becomes an entrepreneur in this model? It is straightforward to see that an individual with skills (x_1, x_2) chooses to be an entrepreneur if the income from entrepreneurship is greater than the income that can be obtained as a specialist:

$$\lambda \min [x_1, x_2] > \max [x_1, x_2] \tag{3}$$

This simple model leads to several predictions, which can be easiest illustrated graphically. In Fig. 1, the two skills x_1, x_2 are plotted on the x-axis and y-axis, respectively. The 45° line denotes all cases where $x_1=x_2$. If $x_1>x_2$ (points below the 45° line), then an individual becomes an entrepreneur if:

$$x_2 > x_1/\lambda \qquad (\text{because } \min [x_1, x_2] = x_2 \text{ and } \max [x_1, x_2] = x_1) \tag{4}$$

If, on the other hand, $x_2>x_1$ (points above the 45° line), then an individual will be an entrepreneur if:

$$x_1 > x_2/\lambda \quad \Leftrightarrow \quad x_2 < \lambda x_1 \tag{5}$$

These two conditions for individuals engaging in entrepreneurship are shown as the shaded area in Fig. 1. The regions lying outside of this area correspond to individuals who become specialists, because they have sufficiently high values of one skill relative to the other, so that it pays to specialize in one of them and receive income x_1 or x_2, respectively.

Figure 1 makes several interesting features of this theoretical account of entrepreneurship apparent. First, the supply of entrepreneurship increases in λ, i.e., people are more likely to become entrepreneurs when the market compensation for entrepreneurship rises. An increase in λ, graphically, enlarges the shaded area in Fig. 1, thus leading to a larger number of entrepreneurs. Second, more "balanced" individuals are more likely to become entrepreneurs. Graphically, this can easiest be seen for the case where $x_1=x_2$ (45° line), which represents the highest likelihood that

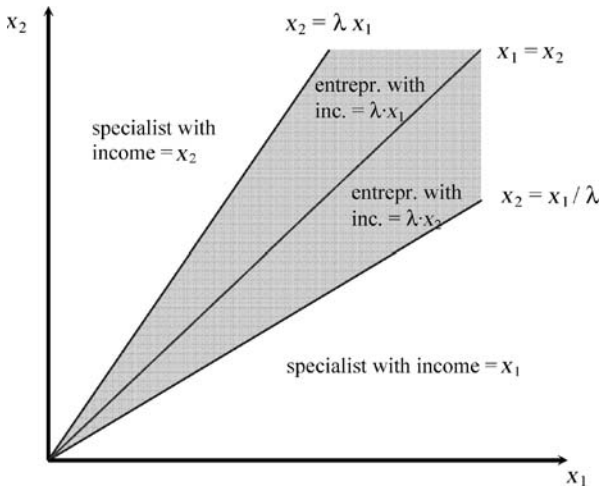

Figure 1 Lazear's (2005) theory of entrepreneurship

an individual chooses to be an entrepreneur. The more unbalanced skills become, i.e., the further one moves towards one of the axes, the smaller is the likelihood of an individual being an entrepreneur. Lazear (2005), Wagner (2003) and Backes-Gellner and Lazear (2003) provide ample empirical evidence in particular for the second prediction. They find, for example, that individuals who hold a larger number of prior job roles, or that study a broader curriculum in a MBA program, are more likely to become entrepreneurs. Both results are consistent with the view that either more balanced individuals pursue broader interests or that individuals who wish to become entrepreneurs invest in acquiring a broader set of skills.

Lazear's model is also instructive in a different way, namely because it allows to embody almost all relevant economic theories of entrepreneurship in one single parameter, λ. The parameter λ, generally speaking, measures the market value of entrepreneurial activity, but it is worthwhile to think about what λ reflects in market equilibrium. Most modern economic theories of entrepreneurship (e.g., Kihlstrom & Laffont, 1979) would treat λ as a risk premium, following the tradition of Knight (1921), who described the primary function of the entrepreneur as one of a risk-taker. Schumpeter (1934) would likely conceive λ as a temporary monopoly profit attached to disruptive innovation, in some cases protected by patents. In a similar vein, Kirzner's (1973) treatment of entrepreneurship would embody λ as a reward for "attentiveness" and for "being an arbitrageur" that exploits new profit making opportunities. There might also be other interpretations of λ, one of which will be given and discussed below.

Accounting for non-monetary benefits of entrepreneurship

How is the understanding of entrepreneurship changed if non-monetary concerns are taken into account? The consequences of including non-monetary benefits into the theoretical model can be easiest illustrated by slightly changing Lazear's formulation of occupational choice. Below, the term "specialist/entrepreneur income" is replaced with "specialist/entrepreneur utility," and the respective Eqs. 1 and 2 are rewritten as follows:

$$\text{specialist utility} = \max\left[x_1, x_2\right] \tag{6}$$

$$\text{entrepreneur utility} = (\lambda + \mu)\min\left[x_1, x_2\right] \tag{7}$$

Equations 6 and 7 reflect the notion that income is not the only important factor in the decision to become an entrepreneur. Rather, the *utility* of being an entrepreneur consists of the income earned *and* a non-monetary factor μ, a factor that is not achievable for people who work for someone else. The factor μ has quite an intuitive interpretation in this framework: it is the non-monetary utility individuals get from being able to put not only one, but both their skills to use. Following the empirical results presented in "Empirical evidence on the non-profit-seeking nature of entrepreneurship," μ can be best thought of as the non-monetary satisfaction that entrepreneurs enjoy from having more possibilities to exercise their skills and abilities. In a broader sense, μ may also reflect non-monetary utility from pursuing one's own creative ideas (if the second skill is "creativity"), or from the autonomy to decide how

much one wants to engage in more than one skill or activity. In any case, following the formulation of the modified model given above, entrepreneurs enjoy a non-monetary satisfaction μ from every unit of the additional skill they are able to exercise.

It is straightforward to show how the inclusion of μ alters the theoretical understanding of entrepreneurship. In this modified model, an individual will become an entrepreneur if:

$$x_2 > x_1/(\lambda + \mu) \quad (\text{for the case } x_1 > x_2) \tag{8}$$

and

$$x_1 > x_2/(\lambda + \mu) \qquad (\text{for the case } x_2 > x_1) \tag{9}$$

Because $x_1/(\lambda + \mu) < x_1/\lambda$, and $x_2/(\lambda + \mu) < x_2/\lambda$, it follows that the income thresholds x_2 and x_1 for engaging in entrepreneurship, respectively, are lower when people gain non-monetary utility μ from being an entrepreneur. Graphically, the existence of μ causes the shaded area in Fig. 1 to increase, as the borders of the shaded area move towards the axes.

The modified model generates several interesting implications. First, as in Lazear (2005), it predicts that individuals with balanced skills are more likely to become entrepreneurs, but in contrast to Lazear's original model, people need not earn high monetary returns on their varied abilities in order to choose entrepreneurship. Individuals may actually enter entrepreneurship even if the monetary returns on balanced skills are *negative* ($\lambda<1$). This prediction clearly contrasts with Lazear's original formulation. Second, and relatedly, the modified model suggests that individuals are willing to pay a price in order to be an entrepreneur, i.e., it predicts a compensating income differential associated with entrepreneurship. And third, the overall supply of entrepreneurship is larger when people enjoy non-monetary utility from being an entrepreneur. This last effect can most pronouncedly be seen for the case where $\lambda=1$, i.e.,when the market provides no income premium associated with entrepreneurship whatsoever. In contrast to a model based on income considerations, our modified model predicts a positive supply of entrepreneurship even under this condition that no profits can be made. All the three theoretical predictions proposed can in principle be tested empirically.

The modified model of entrepreneurship corresponds well with some empirical facts. First, its predictions are consistent with the finding that entrepreneurship entails compensating wage and return differentials. According to Hamilton (2000) and Moskovitz and Vissing-Jorgensen (2002), these wage and return differentials can be of substantial magnitude, pointing to large non-monetary benefits of entrepreneurship. Second, evidence reported by Åstebro (2005) suggests that monetary returns to varied ability are negative for a sample of Canadian entrepreneurs. This result can be explained by a 'taste for variety,' as proposed here, but not in Lazear's (2005) framework. The modified model, however, also has drawbacks. In particular, it cannot explain why the overall distribution of entrepreneurial incomes is characterized by a superstar-distribution. To account for this stylized fact, we propose below a modified version of a model by Murphy et al. (1991), describing the choice to become an entrepreneur in a somewhat different way.

Why is there a superstar-distribution of entrepreneurial incomes?

Murphy et al. (1991) provide a simple model of occupational choice that can shed light on the relative earnings distributions of entrepreneurs and employees. In their theoretical account of entrepreneurship, entrepreneurs are assumed to run firms and employees work for someone else, with their respective incomes defined as follows:

$$\text{worker income} = w\,A \tag{10}$$

$$\text{entrepreneur income} = s\,A\,F(H) - w\,H \tag{11}$$

where A is the ability of an individual, s is a common state of technology, F is a standard concave production function, H is the aggregate human capital of the workers employed in a firm (a proxy for firm size), w is the workers' wage, $w\,H$ are the production costs of the entrepreneur, and the price of the goods produced by entrepreneurs is by assumption normalized to 1. In this model, individuals have to make two decisions. First, they take the common state of technology s and the wage w as given and decide whether to engage in entrepreneurship or dependent employment. Second, if a person decides to become an entrepreneur, he or she has to choose the size of the firm he or she wants to run. As can be shown using the first order condition of entrepreneurial income with respect to firm size H, entrepreneurs with higher ability A will run larger firms:

$$s\,A\,F'(H) = w \tag{12}$$

i.e., because $F'(H)$ is decreasing in A, more able individuals will choose to run firms of a larger size. Equation 12 indicates that the firm size $H(A)$ is an endogenous variable in the model, and therefore it should be included in the formulation of the entrepreneurial income:

$$\text{entrepreneur income} = s\,A\,F(H(A)) - w\,H(A) \tag{13}$$

The individual choice of occupation can now be derived. A person will become an entrepreneur if the income from doing so exceeds the income that can be obtained as a worker:

$$s\,A\,F(H(A)) - w\,H(A) > w\,A \tag{14}$$

Equation 14 contains the main theoretical idea of the model, namely that entrepreneurship is characterized by *increasing returns to ability*. It is attractive for persons with high ability to become entrepreneurs because entrepreneurial profits are a convex function of A, while workers' incomes only rise linearly in A. This characteristic comes about because an entrepreneur's output ($s\,A\,F(H(A))$) rises more with ability than do his or her production costs ($w\,H(A)$).[4] As a consequence, more

[4] If, for example, a logarithmic production function is assumed, $F(H)=\log(H)$, then it follows from Eq. 12 that $H^*=s\cdot A/w$. The resulting entrepreneur's income is $s\cdot A\cdot\log(s\cdot A/w)-s\cdot A$, i.e., the production costs $s\cdot A$ rise proportionally with A, while the output $s\cdot A\cdot\log(s\cdot A/w)$ rises more than proportionally with A (see Fig. 2).

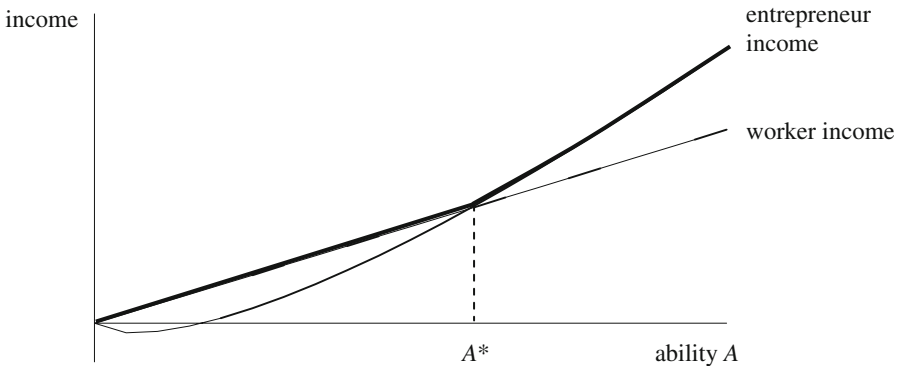

Figure 2 Increasing returns to ability for entrepreneurship (Murphy et al., 1991)

able entrepreneurs strive to run larger firms so that they can spread their ability advantage over a larger market. In a sense, the existence of increasing returns to ability creates a naturally occurring monopoly position for entrepreneurs that is not competed away even in a perfectly competitive market. Entrepreneurs can benefit more or less from their high ability depending on the returns to scale in their "industry," which is measured by the concavity of the production function $F(H)$. Analogies to other markets are obvious, e.g., the arts or sports markets, where the ablest individuals can earn disproportionally high incomes, in particular when there are high returns to scale (like in the global markets for movies or tennis).[5]

What are the predictions of this model with respect to entrepreneurs' and workers' incomes? In Fig. 2, a graphical representation of the model is given, indicating how the incomes of workers and entrepreneurs depend on ability A. A^* denotes a threshold value that separates entrepreneurs from workers. For values $A>A^*$, individuals become entrepreneurs, and for values $A<A^*$, they choose to be an employee (as indicated by the solid income-line). Figure 2 clearly illustrates a core prediction of the model: entrepreneurs earn strictly higher incomes than employees. In particular, the average as well as median incomes of entrepreneurs are higher than those of workers, the more so the more increasing returns to ability are.

How does the understanding of entrepreneurship change when non-monetary benefits are taken into account? Again, we slightly change the formulation of the model by replacing the term "worker/entrepreneur income" with "worker/entrepreneur utility," and rewrite the respective Eqs. 10 and 11 as follows:

$$\text{worker utility} = w\,A \tag{13}$$

$$\text{entrepreneur utility} = s\,A\,F(H(A)) - w\,H(A) + \mu \tag{14}$$

[5] It should be noted that the model of Murphy et al. (1991) only includes one dimension of ability, while Lazear's (2005) model stresses the importance of the balance of abilities for entrepreneurship. The two approaches can be made compatible when A is assumed to be a measure for the balance of abilities rather then a measure for general ability.

where μ represents non-monetary benefits of entrepreneurship, like being one's own boss or having greater possibilities to put one's skills and abilities to use. The inclusion of μ into the model alters the predictions on the relative incomes of entrepreneurs and workers considerably, as can be seen in Fig. 3.

Figure 3 makes clear that the existence of μ causes the ability threshold to fall (from A^* to A^{**}), and individuals become entrepreneurs already in situations where they earn less than employees (as indicated by the solid income-line). The model thus predicts that a considerable share of entrepreneurs earns lower incomes than employees (depending on the mass distribution of ability A in the population). At the same time, the model predicts that the richest individuals in the economy will be entrepreneurs, and that these individuals earn far above-average incomes. Both predictions correspond well with the stylized fact that entrepreneurial incomes are characterized by a superstar-distribution. The available evidence from different countries shows that the median entrepreneurs earn less than comparable employees, but that a few entrepreneurs earn very high incomes (e.g., for the United States, Hamilton, 2000; for West Germany, Merz, 2004; and for Finland, Poutvaara & Tuomala, 2004). The modified model of entrepreneurship proposed here produces this result. It is noteworthy that the result can only be obtained if non-monetary considerations are taken into account. The inclusion of μ in the theoretical model thus leads to a better understanding of a central characteristic of entrepreneurship, namely its peculiar distribution of incomes.

The modified model provides a few additional interesting insights. Figure 3 shows that entrepreneurs are the richest individuals in the economy, but this doesn't necessarily mean that they are only interested in money. High-income entrepreneurs may well get non-monetary satisfaction from their work, but this satisfaction is not straightforward to detect in wage differentials, because the increasing returns to ability characteristic of entrepreneurship makes this group difficult to compare to regular employees. Wasserman (2004), however, provides empirical evidence that founders of high-growth ventures are willing to work for less money compared to other executives employed in their firms. This result is consistent with the view that also high-potential entrepreneurs enjoy non-monetary benefits from work. A second remarkable feature of the model is that it predicts people with low ability to become

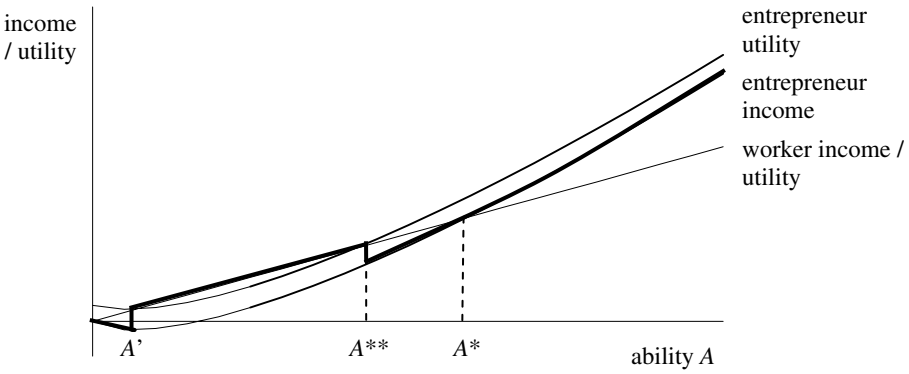

Figure 3 Accounting for non-monetory benefits of entrepreneurship

entrepreneurs ($A<A'$). It seems not unreasonable that persons with very poor income prospects as employees start their own business in order to enjoy relative freedom. A significant literature in entrepreneurship research, for example, argues that people at the margin of society are likely to engage in entrepreneurship (see e.g., the survey in Martinelli, 2001). As well, people with low education have been repeatedly found to have an above-average likelihood of becoming entrepreneurs (e.g., Evans & Leighton, 1989). The model predicts that these groups of entrepreneurs will run very small firms, a result that seems plausible for at least parts of "minority" and "low-education" entrepreneurship and that is certainly empirically testable.

Extensions and counterarguments

Extending the definition of entrepreneurship

In the preceding sections, entrepreneurship has been defined to mean that someone is a self-employed business owner. This definition puts strong emphasis on the ownership aspect of entrepreneurship, and as a consequence, stresses the role of entrepreneurs as residual claimants, bearing the risk of doing business. While this definition provides a relatively straightforward classification of who is an entrepreneur, there is by far no consensus in the literature that entrepreneurship is properly defined in this way (e.g., Parker, 2003). Important schools of thought conceive entrepreneurship differently. Most importantly, following the tradition of Schumpeter (1934), entrepreneurship is often seen as an innovative activity that involves the carrying out of novel combinations and exploiting of new opportunities. Such an "entrepreneurial" function can also be performed by employed managers in established organizations, e.g., when they introduce new products, business processes or organizational structures.

Does a changed definition, stressing the innovative nature of entrepreneurship, require a restriction or modification of the arguments advanced? It shall be argued that this is unlikely to be the case. A focus on entrepreneurship as innovative activity involves similar issues as those discussed in the previous sections. In particular, it can be shown that non-monetary benefits also play an important role in innovative entrepreneurship.

A study by Åstebro (2003), already discussed in "Empirical evidence on the non-profit-seeking nature of entrepreneurship," explicitly investigates invention activities by small business owners. The evidence he presents suggests that efforts to innovate are not undertaken so much because they pay in a monetary sense. The median return on the sample of inventions he studies is negative, and their average return is lower than for comparable risky investments, like high-risk securities or early-stage venture capital funds. Although different interpretations of this result are possible (see the next subsection), an explanation is that small-business innovators enjoy substantial non-monetary satisfaction from pursuing their own creative ideas. Related evidence has also been presented for the important subset of entrepreneurs that found high-growth firms, i.e., start-ups that are often considered particularly innovative and that are typically financed by venture-capital funds. Wasserman

(2004) shows that founders of such firms in the United States are willing to work for lower incomes than other, non-founding executives employed at the same firms (even controlling for the level of stock and stock option ownership). This suggests that founders of firms like Apple, Microsoft or Genentech may have started their firms in the first place because they enjoyed substantial non-monetary satisfaction from being an innovative entrepreneur. It is noteworthy that Schumpeter (1934: 93 f.) himself referred to the "joy of creating" as an explanation for why people engage in entrepreneurial activities.[6]

Non-monetary satisfaction from being innovative has also been empirically documented for contexts outside the narrow scope of business ownership. Stern (2004), for example, shows that "scientists pay to be scientists." According to his empirical evidence, R&D organizations can offer lower wages to employed researchers if they allow them to pursue and publish an individual research agenda (in contrast to doing purely commercially oriented research). The empirical results are particularly convincing because the author compares multiple job offers to the same individuals. Similar non-monetary values of pursuing one's own ideas have been found for other innovative sectors and industries. In arts and entertainment, for example, individuals have been consistently shown to accept an inferior earnings situation in exchange for artistic and creative freedom. However, overall artists' incomes correspond to a superstar-distribution similar to the one that can be observed for entrepreneurs (e.g., Wassall & Alper, 1992; Throsby, 1996; Towse, 2000). At large, the behavior of people engaging in innovative ventures seems to be in accordance with theories that stress the importance of intrinsic (non-monetary) motivation for creativity and innovation (Amabile, 1983, 1997).

Counterarguments and alternative explanations

Does the empirical evidence discussed in the previous sections clearly show that entrepreneurship is a non-profit-seeking activity? While the findings on wage and return differentials for entrepreneurship seem to be an empirically robust phenomenon, they might point to factors other than non-monetary benefits of being an entrepreneur. Two alternative explanations in particular have received attention in the literature: entrepreneurs might be people that are less risk-averse than others, and they might be more over-optimistic.

A lower risk aversion of entrepreneurs can potentially explain the empirical regularities observed, because entrepreneurs might not demand a risk premium if they do not suffer from the higher income risk they face. As a result, the observed

[6] The full passage in Schumpeter (1934: 93–94) reads as follows: First of all there is the dream and the will to found a private kingdom, usually, though not necessarily, also a dynasty. [...] Then there is the will to conquer: the impulse to fight, to prove oneself superior to others, to succeed for the sake, not of the fruits of success, but of success itself. From this aspect, economic action becomes akin to sport [...]. The financial result is a secondary consideration, or, at all events, mainly valued as an index of success and as a symptom of victory, the displaying of which very often is more important as a motive of large expenditure than the wish for the consumers' goods themselves. [...] Finally, there is the joy of creating, of getting things done, or simply of exercising one's energy and ingenuity. [...] Our type seeks out difficulties, changes in order to change, delights in ventures."

lower risk-adjusted returns associated with entrepreneurship might not reflect non-monetary benefits from work, but could simply indicate differences in risk preferences between entrepreneurs and non-entrepreneurs. The empirical evidence on differences in risk aversion, however, is rather inconclusive. van Praag and Cramer (2001) and Cramer et al. (2002), for example, find that self-employed people are more risk loving than employees using hypothetical survey questions about gambling. On the other hand, Brockhaus (1980) and Tucker (1988) find insignificant effects using similar survey measures, and Lindh and Ohlsson (1996) show that self-employed persons are actually less likely to play in real-life lotteries than employees. Overall, differences in risk aversion seem unlikely to explain why substantial income and return differentials for entrepreneurship exist.

A more serious objection, and probably the most important counterargument against the ideas proposed in this paper, is that entrepreneurs are not different in their risk preferences, but that they assess risk in a biased way. Entrepreneurs may be over-optimistic: they grossly overestimate their chances of success, and substantially underestimate their subjective risk of failure. If such behavior prevails, entrepreneurs might be prepared to accept an inferior material situation in exchange for the belief that 1 day they will become one of the few, indeed existing, high-income entrepreneurial superstars. This view corresponds well with the fact that entrepreneurial incomes are characterized by a superstar-distribution. There are a few "big prices" to win, and people try to obtain them despite the poor subjective chances to succeed. Entrepreneurship, in this view, is similar to a "winner-take-all" market as described in Frank and Cook (1995). Individuals engaging in entrepreneurship suffer from a psychological bias, constantly justifying their inferior average material situation with biased judgements about their chances for success.

There is indeed some evidence showing that entrepreneurs are more over-optimistic than non-entrepreneurs. A study by Arabsheibani et al. (2000), in particular, compares self-employed and employed persons' expectations of future prosperity with the actual outcomes they experience. The authors find that people are in general over-optimistic with respect to their financial prospects, but the self-employed are more so than employees. There were 4.6 times as many entrepreneurs expect an improvement in their financial situation but experience a deterioration as expect a deterioration in their financial situation but experience an improvement. The ratio documented for employees is 2.9. The self-employed thus seem to be worse at correctly forecasting their future financial prosperity, and they are systematically more over-optimistic about their prospects than employees. Entrepreneurial optimism has also been documented in studies by Puri and Robinson (2005) and Busenitz and Barney (1997).

Does the likely existence of over-optimism in entrepreneurs mean that, after all, entrepreneurship is a "for-profit-seeking" activity? There are several arguments suggesting that this is not the case. First, it is noteworthy that over-optimism constitutes a psychological bias that is incompatible with profit-maximization; in this sense, entrepreneurship is still a non-profit-seeking activity. In contrast to non-monetary benefits of entrepreneurship, however, the existence of over-optimism violates the concept of rational utility maximization (if it is a bias and not a preference). An important counterargument against the prevalence of such biases is

that business people who presumably are smart and rational would eventually understand and overcome them. For example, it seems unlikely that the median self-employed person who after 10 years in business earns 35% less than a comparable employee (Hamilton, 2000) is still believing that he or she will become the next Bill Gates. Rather, a more plausible explanation seems to be that these people remain in business because they have come to appreciate the non-monetary benefits of being an entrepreneur. Second, a substantial number of empirical findings discussed in "Empirical evidence on the non-profit-seeking nature of entrepreneurship," challenge the notion that over-optimism is particularly important. Benz and Frey (2007), for example, show that the higher job satisfaction of the self-employed in Western European, Northern American and Eastern European countries can mainly be explained by the higher autonomy and the more interesting work content that they enjoy, but not by their perceptions of better opportunities for advancing (which can be seen as a proxy for income prospects). In the same vein, qualitative studies on entrepreneurs' motivations to start a firm have repeatedly shown that people do not regard income considerations as an important reason for why they engaged in entrepreneurship. Finally, as shown in "Implications for economic theories of entrepreneurship," the existence of a superstar-distribution of entrepreneurial incomes can be theoretically explained by factors other than over-optimism, namely by a combination of increasing returns to ability and non-monetary benefits of entrepreneurship.

Implications for economic policy

What are the consequences for economic policy if entrepreneurship is a non-profit-seeking activity? While the arguments advanced in this paper are mainly intended to offer a re-conceptualization of the economic view on entrepreneurship, they are also likely to have policy implications. In this section, it is shortly discussed how the non-profit-seeking nature of entrepreneurship changes traditional economic policy views in the areas of tax policy, patent protection and competition policy.

Tax policy is generally seen as an important determinant of entrepreneurship (for a survey see e.g., Schuetze & Bruce, 2004). For example, the relative tax burden on entrepreneurship and wage employment can influence the decision of individuals to become entrepreneurs, or the progressivity of the tax system can make entrepreneurship more or less attractive. Are the basic predictions on how taxes affect entrepreneurship changed if the non-profit-seeking nature of entrepreneurship is taken into account? It has to be noted that this is unlikely to be the case. Entrepreneurs motivated by non-monetary concerns will react to changes in financial incentives at the margin in a similar way as entrepreneurs motivated by profit concerns alone. The non-profit-seeking nature of entrepreneurship simply suggests that the changes induced will start from a different level. Thus, if the encouragement of entrepreneurship is a goal of public policy, tax measures are likely to achieve these goals whether entrepreneurship is a non-profit-seeking activity or not.

Similar arguments can be made with respect to patent protection. Innovation activities are likely to be stimulated by stronger patent rights irrespective of the

underlying motivation to innovate. Again, the non-profit-seeking view of entrepreneurship is not concerned with changes at the margin, but with an explanation of the levels of innovative activity, predicting a higher level of innovation for a given strength of patent protection. In the extreme, a certain level of innovation efforts by entrepreneurs is expected even if patent rights are very weak.

Policy implications are more concrete for the area of competition policy. Competition policy traditionally focuses on the control of mergers and acquisitions by established firms, with the aim of preventing excessive market power. While this is without doubt important, the arguments presented in this paper suggest that competition policy could alternatively concentrate on the foundation of new enterprises. In a dynamic, Schumpeterian view of economic development, new ventures are of crucial importance because they bring about most of the disruptive "breakthrough" innovations (Baumol, 2004). If entrepreneurship is a non-profit-seeking activity, one can expect an "oversupply" of entrepreneurship in these areas, i.e., people will engage in entrepreneurial activities even if profit-making opportunities are low. Competition policy can take advantage of this oversupply by not restricting opportunities for entrepreneurship. In many countries, the barriers to entry and the administrative burdens on running a business are still relatively high (Djankow et al., 2002), and it has been empirically shown that such obstacles depress entrepreneurial activity (Desai, Gompers, & Lerner, 2003; Klapper, Laeven, & Rajan, 2004). Lowering barriers to entry and reducing administrative regulations on conducting business can thus be seen as important elements of a dynamically oriented competition policy. In essence, economic policies should preserve the individual freedom to become and to be active as an entrepreneur. While this recommendation is not particularly novel, it clearly contrasts with an approach that stresses the need to provide monetary incentives to promote entrepreneurship. The non-profit-seeking view of entrepreneurship suggests an alternative policy, namely to simply enable entrepreneurial activities.

Finally, the question of what motivates people to become entrepreneurs is important to assess the desirability of policy measures in general. If people suffer from a psychological bias, like over-optimism, then public policies to increase entrepreneurship are likely to have negative consequences. In this case, people are encouraged to enter entrepreneurship even if they consequently suffer from inferior financial outcomes and possibly also reduced overall satisfaction. In contrast, if people "rationally" engage in entrepreneurship because they have a preference for its non-monetary benefits, as suggested in this paper, then public policies such as reducing barriers for entrepreneurship have more positive consequences. In this case, the policy enables individuals to more freely choose the form of employment in which they find the highest satisfaction (for evidence on this point, see e.g., Blanchflower, Oswald, & Stutzer, 2001).

Conclusions

Entrepreneurship is a crucial function in market economies. It is therefore important to understand what motivates people to engage in it. In this paper, it has been argued

that traditional economic views on why individuals undertake entrepreneurial activities are incomplete. Entrepreneurship is not only and not even mainly a quest for profit. Rather, it is more accurately characterized as a non-profit-seeking activity.

Contrary to the belief that people engage in entrepreneurship in order to make profits, a considerably body of empirical research shows that entrepreneurship is not particularly attractive in monetary terms. Being an entrepreneur emerges to be rewarding because it provides individuals with non-monetary satisfaction from aspects like higher autonomy, greater possibilities to use their skills and abilities, and the chance to be creative in pursuing their own ideas. It has been illustrated how these non-monetary benefits can be incorporated into economic theories of entrepreneurship. Further efforts along these lines seem instrumental in arriving at an improved understanding of entrepreneurship.

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